

**REMARKS**

Claims 1-2, 4-28, and 30-37 are pending in the present application. In the Office Action mailed May 3, 2007, the Examiner rejected claims 9-11 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. The Examiner next rejected claims 18, 20, and 23 under 35 U.S.C. §103(a) as being unpatentable over Marhofer et al. (USP 5,932,123). Claims 1, 2, 4-8, 14-17, 19, 24, 27, 28, and 33 are rejected under 35 U.S.C. §103(a) as being unpatentable over Marhofer et al. further in view of Rosen (USP 3,586,222). Claims 21 and 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Marhofer et al. as applied to claim 18, and further in view of Huismann et al. (US Pub. 2004/0016735). Claims 12, 13, 25, and 26 are rejected under 35 U.S.C. §103(a) as being unpatentable over Marhofer et al. taken with Rosen as applied to claims 1, 2, 4-8, 14-17, 19, 24, 27, 28, and 33, and further in view of Huismann et al.

Claim 9 recites a sensor configured to determine a rotational direction of the at least one ECM. The Examiner rejected claim 9 under 35 U.S.C. §112, first paragraph, for lack of enablement, alleging that “[t]here is no disclosure in the specification of a sensor to determine rotational direction of the ECM. . . . The specification therefore would not enable an artisan of ordinary skill to make and use the invention.” *Office Action*, 5/3/07, pg. 2. Applicant respectfully disagrees. Paragraph 35 of the specification states:

The ECM 112 includes a variety of sensors configured to generate feedback regarding the operation of the ECM 112. For example, it is contemplated that Hall Effect sensors may be included within the ECM 112 to send feedback regarding phase pulses. Additionally, it is contemplated that **sensors may be included to detect the rotational position/displacement of the rotor or shaft of the ECM 112.** Similarly, it is contemplated that sensors may be included to detect and send feedback regarding the speed and the torque of the ECM 112.

*Application*, ¶ 35 (emphasis added). The specification goes on to describe various methods of connecting sensors to produce feedback regarding the ECM’s operation. See ¶¶ 34-43. For instance, “[t]he wire feeder system 102 includes at least two feedback loops 130, 132 which enable accurate control of the ECM 112.” *Application*, ¶ 34. Also, “[a] first feedback loop 130 is configured to function to send the feedback derived from the sensors within the ECM 112 to the welding/wire feed state machine controller 108.” *Application*, ¶ 36. Therefore, a sensor to determine rotational direction of the ECM is disclosed in such a way that one of ordinary skill would be able to make and use the sensor. Thus, Applicant respectfully requests withdrawal of the 35 U.S.C. §112, first paragraph of claims 9-11.

Claims 3 and 29-32 were indicated as containing allowable subject matter. *Office Action*, supra at ¶ 8. Such indication is appreciated. Claim 1 has been amended to include the limitations of claim 3, and claim 27 has been amended to include the limitations of claim 29. As such, claims 1 and 27, and all claims depending therefrom, are now in condition for allowance.

Claim 18 has been amended to call for, “monitoring feedback from at least a select one of a number of feedback sensors arranged about a consumable delivery mechanism; and automatically adjusting the electronic commutation of the ECM in response to the selected sensor and resulting consumable delivery feedback to perform the welding-type process.” The prior art fails to teach or suggest monitoring feedback from at least a select one of a number of feedback sensors and automatically adjusting the electronic commutation of the ECM in response to the selected sensor and resulting consumable delivery feedback.

Marhofer et al. discloses a welding feeder system with control circuitry, an ECM, and sensors and circuitry for “closed loop control of the drive, oscillator and wire feed motors.” *Id.* at col. 2, lns. 64-65. An “operating mode” is selected and the control circuitry operates the motors substantially at the nominal speed specified in a currently selected operating mode.” *Id.* at col. 3, lines 4-8. Additionally, the control circuitry receives input signals which indicate the speeds of the motors, so that the speeds can be altered to fit within the range of the selected operating mode. *Id.* at col. 3, lns. 9-19 and col. 7, lns. 6-59. However, Marhofer et al. does not teach monitoring feedback from at least a select one of a number of feedback sensors or adjusting the electronic commutation of the ECM in response to the selected sensor. Marhofer et al. teaches adjusting the wire feed without selecting any sensors and bases the adjustment on monitoring of only velocity feedback sensors. *See id.* abstract and col. 7, lns. 6-59. These teachings are distinct from “monitoring feedback from at least a select one of a number of feedback sensors” and “automatically adjusting the electronic commutation of the ECM in response to the selected sensor and resulting feedback” as called for in claim 18. Therefore, Applicant respectfully requests withdrawal of the rejection of claim 18 and all claims depending therefrom.

Applicant submits herewith new claims 34-37. Claim 34 calls for “selecting at least one of a number of feedback sensors based on a current control state of the ECM; monitoring feedback from the selected at least one feedback sensors . . . and automatically adjusting the electronic commutation of the ECM in response to the selected sensor and resulting consumable delivery feedback.” As discussed above, the prior art of record does not teach or suggest “selecting at least one of a number of feedback sensors” and “automatically adjusting the electronic commutation ECM in response to the selected sensor and resulting consumable

delivery feedback.” Additionally, the prior art of record does not teach or suggest “selecting at least one of a number of feedback sensors based on a current control state of the ECM.” The application describes various control states, including “a speed control state, a torque control state, and a pulsed state” of the invention. *Application*, ¶ 29. Additionally, depending on the control state of the invention, different feedback sensors are utilized to automatically adjust the electronic commutation of the ECM. *See Application*, ¶¶ 34-38, 41-42, 47-48, and 54. As the prior art fails to disclose at least these limitations, Applicant respectfully believes that claim 34 and all claims depending therefrom are in condition for allowance.

Applicant has amended claim 8 to correct a typographical error.

Therefore, in light of at least the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 1-2, 4-28, and 30-37.

A fee in the amount of \$300.00 is concurrently being paid via EFS-Web for fees associated with entering the claims newly presented herein.

Applicant appreciates the Examiner’s consideration of these Amendments and Remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

Respectfully submitted,

/Timothy J. Ziolkowski/

Timothy J. Ziolkowski  
Registration No. 38,368  
Direct Dial 262-268-8181  
tjz@zpspatents.com

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**P.O. ADDRESS:**

Ziolkowski Patent Solutions Group, SC  
136 South Wisconsin Street  
Port Washington, WI 53074  
262-268-8100

**General Authorization and Extension of Time**

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-2623. Should no proper payment be enclosed herewith, as by credit card authorization being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-2623. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extensions under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 50-2623. Please consider this a general authorization to charge any fee that is due in this case, if not otherwise timely paid, to Deposit Account No. 50-2623.

/Timothy J. Ziolkowski/

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Timothy J. Ziolkowski  
Registration No. 38,368  
Direct Dial 262-268-8181  
tjz@zpspatents.com

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